An Assessment of American Jobs Created under the *Energy Policy Act of 2002*

The staff of the Committee on Energy and Natural Resources of the United States Senate has completed an analysis and compilation of studies on the jobs that would be created under the *Energy Policy Act of 2002*. Implementing these polices would help address many important matters, including energy supply, employment, energy security and environmental protection. These studies show that the policies outlined in the *Energy Policy Act of 2002* would lead to net increases in employment over the next ten years of 1.3 to 1.5 million jobs.

The *Energy Policy Act of 2002* has three overarching main goals. First, the bill ensures investments in a diversity of fuels and technologies for adequate and affordable supplies of energy in the future, including natural gas, oil, coal, hydropower, nuclear power, biomass and other renewable energy sources. Second, the bill establishes a robust set of policies to ensure improvements in the efficiency and productivity of energy production, transmission and energy use in vehicles, industry, commercial equipment, appliances and buildings. Third, the bill integrates important macro and long-term policy goals, infrastructure security, economic development, and global climate change, in making energy policy choices.

Findings

If the *Energy Policy Act of 2002* were enacted, the United States would obtain the following increase in jobs:

- A net employment increase between 1.3 million and 1.5 billion by 2010;
- The Alaska natural gas pipeline provision would create approximately 400,000 new jobs;
- The renewable fuels provision would create 224,000 new jobs; and
- Increasing diversity in power generation through renewable energy and efficiency improvements throughout the system would create between 700,000 and 830,000 new jobs.

The Alaska Natural Gas Pipeline would create approximately 400,000 new jobs for steelworkers, construction workers, truckers, welders, and pipefitters. The 2,100 mile long pipeline would be 48"-52" in diameter and would require over five million tons of steel. (Sources: Hearing before the Committee on Energy and Natural Resources, United States Senate, Testimony on the status of proposals for the transportation of natural gas from Alaska to markets in the lower 48 states and on legislation that may be required to

expedite the construction of a pipeline from Alaska, October 2, 2001 and Bureau of Economic Analysis, Regional Multipliers, RIMS II).

The increased production of renewable fuels (ethanol and biodiesel), as required in the bill, would create 224,000 new jobs for construction workers, pipefitters, refiners, electricians, equipment manufacturers, grain processors, manufacturers and truckers. (Source: "An Economic Analysis of Legislation for a Renewable Fuels Requirement for Highway Motor Fuels", John M. Urbanchuk, Executive Vice President, AUS Consultants, November 7, 2001, www.biodiesel.org/pdf_files/AUS_Final.PDF). Renewable fuel use in the United States would increase from current levels of about 1.9 billion gallons to more than 8.8 billion gallons by 2016.

The renewable energy and efficiency provisions would create between 700,000 and 830,000 new jobs for construction workers, plumbers, electricians, installers, manufacturers, and truckers. A serious effort to increase the diversity of fuels and technologies in the power sector, including a shift of only five percent of new generation from renewables, would add as many as 830,000 jobs by 2010. Renewable technologies are more capital intensive but do not have the fuel risk that fossil generation does. The jobs are up front in the manufacturing and construction stage. (Source: Response letter to Senator Frank Murkowski, Impacts of a 10 percent Renewable Portfolio Standard, December 20, 2001, Table 3, Energy Information Administration). It is important to note that other studies have found that increased investments in energy efficient technologies, renewable energy sources, and higher fuel economy standards would create 700,000 more jobs by 2010. (Source: "Clean Energy: Jobs for America's Future," October 2001, Tellus Institute, www.worldwildlife.org/climate/clean_energy_jobs.pdf).

Corporate Average Fuel Economy

The Energy Information Administration (EIA) analysis, using the National Energy Modeling System (NEMS) model, suggests job losses of 207,000 by 2010 based on the Corporate Average Fuel Economy (CAFÉ) proposal in the *Energy Policy Act of 2002*. The NEMS model does not capture and account for a number of factors affecting GDP and employment. First, and foremost, the model does not include the value of the increased investment from the consumer's purchase of the vehicle. (Source: Response letter to Senator Frank Murkowski, Analysis of Corporate Average Fuel Economy Standards for Light Trucks and Increased Alternative Fuel Use, December 20, 2001, EIA, Page 3).

On the other hand, a model such as Argonne's AMIGA modeling system (which operates like a growth model), would more properly reflect the fact that future returns from energy-efficiency investments (in this case higher mpg vehicles) are re-invested in the economy, increasing future GDP and consumption paths. (Source: Response letter to Senator Frank Murkowski, Analysis of Corporate Average Fuel Economy Standards for Light Trucks and Increased Alternative Fuel Use, December 20, 2001, EIA).

Once the first CAFÉ standards took full effect in the early 1980s, U.S. auto-manufacturing employment increased from 650,000 to more than 800,000 from 1982 - 1985. (Source: "Effectiveness and Impact of Corporate Average Fuel Economy Standards, July 2001, National Academy of Sciences). Total employment in automobile manufacturing in the United States topped one million workers in 2000. (Source: Overview of Report on the American Workforce, 2001, Bureau of Labor Statistics, U.S. Department of Labor).

The House Energy Bill and the Bush Energy Plan

A 2001 Wharton Economic Forecasting Association (WEFA) study estimated that the entire Bush National Energy Plan would generate an additional 224,000 jobs by 2010. The study did not breakdown what measures would generate the jobs, but did assume major facility overhauls would be pushed off into future years due to delayed implementation of environmental standards.

Credible estimates of job creation from development in the Arctic National Wildlife Refuge range from 50,000 to 87,000**.** In all cases, these jobs are only created if there is additional investment, not diversion of funds from other oil and gas projects elsewhere in the United States. The latter is more likely, since the major oil companies are increasingly investing more of their exploration and production dollars outside of the U.S. (Source: Industry data from Salomon Smith Barney and Lehman Brothers)

Congressional Research Service (CRS): An October 2001 study by the CRS found that under the most likely scenario, full development of the Arctic National Wildlife Refuge could require an investment of $6.5 billion and possibly generate 60,000 jobs. CRS concluded the WEFA study selected the more, or most, optimistic of underlying scenarios when there was a choice to be made. (Source: “ANWR Development: Economic Impacts,” October 1, 2001, Congressional Research Service, RS21030).

Wharton Economic Forecasting Association (WEFA): Combining the 2001 WEFA study, with CRS’s assumption of likely investment required to develop the Arctic National Wildlife Refuge, would put the number of jobs at 87,000. A 12 year-old WEFA study prepared for the American Petroleum Institute, often cited by Arctic refuge drilling proponents, estimated between 250,000-735,000 jobs. In September of 2001, WEFA acknowledged that flawed assumptions were used in the 1990 report.

Center for Economic and Policy Research (CEPR): In 2001, the CEPR reviewed the 1990 WEFA study and concluded that flawed analytical assumptions resulted in a serious overstatement of the job creation potential from oil production in the Arctic refuge. According to CEPR, the impact on world oil prices was exaggerated given the likelihood that other oil producers would cut production to maintain oil prices regardless of supply source. CEPR found that an accurate job projection from the Arctic drilling is less than 50,000 jobs. (Source: “Hot Air Over the Arctic? An Assessment of the WEFA Study of the Economic Impact of Oil Drilling in the Arctic National Wildlife Refuge,” September 5, 2001,

Center for Economic and Policy Research).

A new report by the Joint Economic Committee finds that the job projections from drilling in the Arctic National Wildlife Refuge are based on fundamental mischaracterizations of the functioning of oil markets, questionable estimates of the oil resources the Arctic refuge holds, and outdated data and economic assumptions. The report states that drilling in the Arctic refuge would provide only modest employment gains in the long run, with an estimated 65,000 jobs in 2020. This would be an increase in projected employment of less than one tenth of one percent.

Methodology

The reference case contained in the Energy Information Administration's Annual Energy Outlook 2002 (AEO2002) is used as a baseline forecast for the economic analysis performed here.

Construction of the Alaska Natural Gas Pipeline

The calculation of jobs associated with the construction of the Alaska Natural Gas Pipeline employs the same methodology as used in the CRS study (Source: "ANWR Development: Economic Impacts," October 1, 2001, Congressional Research Service, RS21030). Investment cost data is from the major oil companies who have performed an in-depth study of the financial undertaking of the pipeline project.

The Energy and Natural Resource use order of magnitude estimates for jobs generated by the hypothetical development outlays, specifically, the national average of 25.1 jobs in facility and pipeline construction for Arctic regions directly and indirectly 'required' per $1 million of investment, as estimated by the Bureau of Economic Analysis - BEA-RIMS II. It is estimated that the projected investment of $17.2 billion to build the pipeline would lead create a minimum of 392,651 jobs.

Renewable Energy and Efficiency

In making the calculation for jobs created under renewable energy and efficiency provisions, we used data from the AEO2002 (Table 38, pg 68) and a study performed by the EIA on the RPS at the request of Senator Murkowski (Source: Response letter to Senator Frank Murkowski, Impacts of a 10 percent Renewable Portfolio Standard, December 20, 2001, EIA, AEO2002 and Table 3, pg 13). The Committee finds a net increase in capital investment of $27.8 billion. Substantial annual operating cost savings are generated over the next 30-40 years but do not have an impact on the number of jobs. Using a Bureau of Economic Analysis RIMS II multiplier of approximately 30 jobs per $1 million investment (as in the above described method), the Committee finds that a shift to five percent of new electricity generation from renewable by 2010 would add 834,066 jobs.